Jan. 3, 1956 B. G. HAYES 2,729,271

EXERCISER

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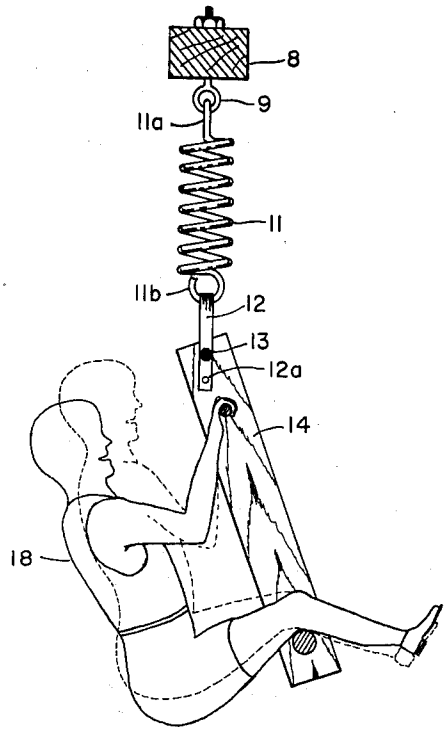


Fig. 1

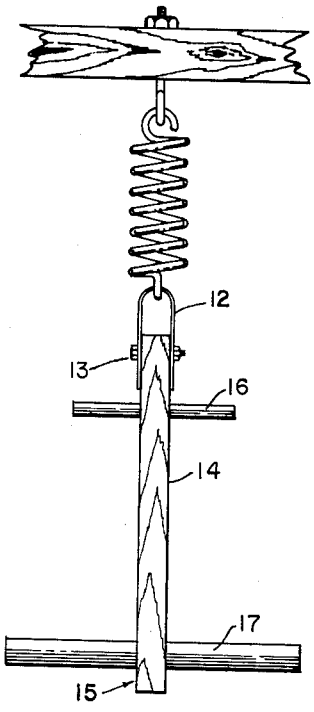


Fig. 2

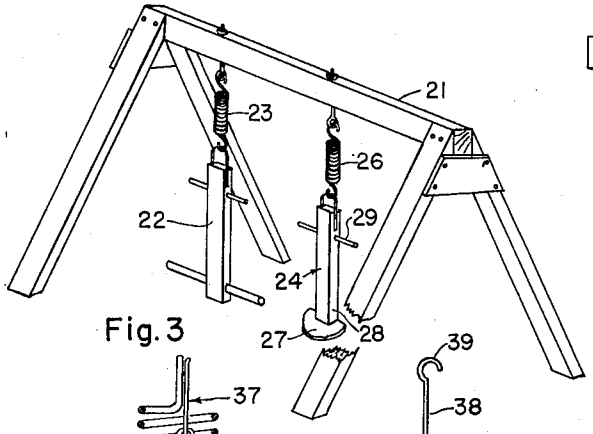


Fig. 3

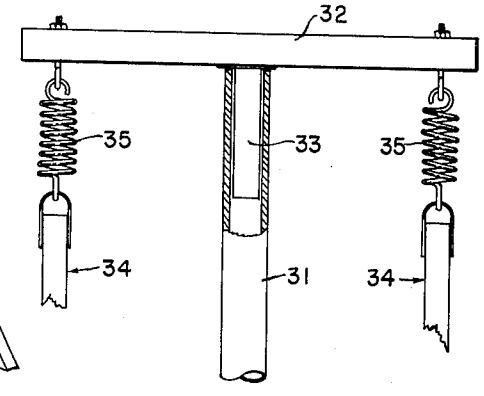


Fig. 4

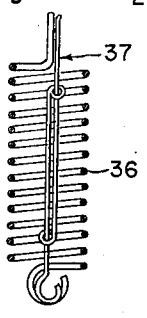


Fig. 5



Fig. 6

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EXERCISER

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3 Claims. (Cl. 155—17)

My invention relates to playground equipment for children and has particular reference to a resiliently suspended exerciser for development of arm and shoulder muscles.

Various type of bars, ladders, swings and other playground equipment are employed for the proper muscular development of young children. Invariably, however, these devices lend themselves more to the development of leg and back muscles and few items of equipment are available for muscular development of the arms and shoulders. The various overhead bars, rings and horizontal ladders give rise to arm development, but place such a great strain on muscle tissue that only the active and strong children use them regularly. In the kindergarten and younger age group especially, the children seldom have sufficient strength to support the weight of their bodies while using such devices.

I have devised a resiliently suspended exerciser that gives maximum arm and shoulder development by virtue of only partly supporting the body weight by the legs of the user. Furthermore, the device tilts in use in such a way as to partially suspend the user's body, throwing part of the body suspending efforts on arm and shoulder. Because of the resilient suspension of my device, the user attempts to set up a vertical rythmic movement which can best be accomplished by pulling the body upward by the arms to start and maintain the vertical oscillation. The child using the device accordingly performs a vertical pumping movement by use of arms and shoulders. These various effects combine to make my exerciser most effective.

It is therefore a principal object of my invention to provide an exerciser for children for development of arm and shoulder muscles.

Another object is to provide an exerciser having resilient suspension.

A further object is to provide an exerciser of resilient suspension wherein a minor part only of the user's body weight is supported by the user's legs.

Still another object is to provide an exerciser having resilient suspension that adapts itself to vertical pumping by the user.

Other objects and advantages of my invention will be apparent in the following description and claims considered together with the drawing forming an integral part of this application, in which:

Fig. 1 is an elevation view of one of my exercisers showing the mode of use;

Fig. 2 is a front view of the exerciser of Fig. 1;

Fig. 3 is an isometric view of a gantry frame supporting two devices embodying my invention;

Fig. 4 is a fragmentary elevation view partly in section of a T frame with a pivoted cross bar supporting two exercisers embodying my invention;

Fig. 5 is a sectional view of a spring for my exerciser having a limit stop for the extension of the spring; and

Fig. 6 is a side view of the limit stop device of Fig. 5.

Referring to Figs. 1 and 2, a suitable horizontal support 8 may have a hook, eye or other suitable fastener

9 connected thereto for the support of a tension spring 11 having upper and lower hooks 11*a* and 11*b* formed thereon. Passing over the lower spring hook 11*b* may be a U-shaped metal strap 12 having several pairs of holes 12*a* through one of which a bolt 13 may pass.

The strap 12 and bolt 13 may support a double cross frame 15 including a vertical member 14, an upper cross member 16 and a lower cross member 17. A child 18 may be supported by the frame 15 by placing his legs over the lower cross member 17 and by grasping the upper cross member in his hands.

The rate of spring 11 should be related to the weight of the user for best results. For example, a spring that is 9 inches long at rest and stretches four inches under the static weight of a 40 pound child is satisfactory for children of this approximate weight. Corresponding weight-spring ratios may be satisfactory for children of greater weight and for very light children. The cross members 16 and 17 are preferably rounded and dowels may satisfactorily be used for this purpose. The cross member 17 preferably may have a diameter of about 1½ inches as smaller diameter dowels have a tendency to bear too heavily against the leg of the user and "cut" into it. The upper cross member 16 may be any suitable size, for example, ¾ inch diameter or larger. The length of the cross arms or members 16 is not of importance and any length that carries out the function is satisfactory. The cross pieces or arms 16 and 17 are preferably parallel and the spacing will depend upon the size of the child. For ages 6 months to 2 years a 17 inch spacing is satisfactory, and for larger children from 2 to 4 years a 24 inch spacing is satisfactory. The adjustment holes 12*a* in the strap 12 permit different spacings of the frame from the ground.

In operation, the user 18 preferably places his legs over the lower cross piece 17 so that the back of the knee rests thereon. The user grasps the upper cross piece 16 with his hands. The user's body may then be in the position shown in solid outline. By pulling upwardly with his arms the body of the user may assume the relative position shown in broken outline. The reaction to this change in body position stretches the spring 11. Thereafter the user may relax permitting his body to take a position relative to the frame to, or below, that shown in solid outline. The spring thereupon contracts, starting in motion a vertical oscillation that carries with it the body of the user. Continuation of the movements results in a rythmic "pumping" action in a vertical direction, causing a large vertical harmonic oscillation of the frame and its user.

The pumping action depends primarily upon the user pulling upwardly with his arms. This pull, plus the pull against the slightly inclined frame member 14 (due to an offset center of gravity when in use) causes exercise of the arm and shoulder muscles of the user, giving them adequate and complete exercise. A substantial but minor part of the body weight is supported by the legs, preventing undue arm and shoulder strain, which in other devices generally causes early fatigue and lack of use of the apparatus. My invention, therefore, so supports the body that maximum exercise for arm and shoulder muscles may be obtained.

Referring to Fig. 3 there is illustrated a gantry support 21 from which may be suspended a pair of devices embodying my invention including a double cross frame 22 suspended by a spring 23 and a seat type frame 24 suspended by a spring 26. The frame 24 may differ from that of Figs. 1 and 2 by employing a seat 27 connected to a vertical member 28 to which may be secured an upper cross bar 29. The seat will assist the support of very young children or exceptionally weak children. The vertical pumping is then obtained by relative movement of the upper part of the body more in the nature of a hunching

operation which may be greatly assisted by pulling upon the cross bar **29** with the user's arms.

Referring to Fig. 4 there is illustrated the use of a pair of my inventions on a rotatable supporting frame. A suitable central support **31** may be used, such as a steel tube inserted in concrete, and a cross arm **32** may be pivoted thereon in any suitable manner as by a tube shaft **33** secured thereto projecting into the tube **31**. A double cross frame **34** may be suspended from each end of the pivoted cross arm **32** by means of suitable springs **35**. By occasionally pushing on the ground the user may set the cross arm **32** in rotation and this rotation to some extent may be maintained by the particular manner of vertical pumping. This rotational movement enhances the attractiveness of the invention giving rise to an angular dimension of movement in addition to swaying actions which can also be obtained if desired.

Illustrated in Fig. 5 is a spring **36** having an extension limiter **37** disposed therein. This device **37** prevents the spring from being stretched beyond its elastic limit which, of course, would cause damage to the spring. Springs having a suitable weight for very small children can be easily stretched beyond their elastic limit by children of older years and hence greater weight. The device **37** accordingly may consist of two linear members **38** each having a hook **39** formed on the end and each terminating in a loop **41** that surrounds or encloses the other member. When the device is elongated the two loops **41** engage each other stopping further extension of the spring **36**.

Having described my invention with respect to preferred embodiments thereof I do not limit myself to these embodiments as they are merely illustrative of my device. Various modifications and improvements will occur to those skilled in the art and accordingly I claim all such improvements and variations as fall within the true spirit and scope of my invention.

I claim:

1. An exerciser wherein part of the weight of the user is supported by his arms comprising: a vertical frame member; an upper cross arm member secured to the frame member and extending from opposite sides thereof; a lower cross arm member parallel to the upper cross member and secured to the frame and extending from opposite sides of the frame member and spaced from the upper cross member by a distance approximately that from shoulder to hips of the user; and a tension spring secured to the upper end of the frame member; said exerciser being adapted for suspension from an overhead support, whereby the user may grasp the upper cross member with his hands and place his knees over the lower cross member to cause vertical oscillations when the user vertically pumps the exerciser.

2. An exerciser as set for in claim 1 wherein the connection between the tension spring and the vertical frame member is a U-shaped strap projecting from the upper end of the vertical member and the spring has a hook on the lower end thereof to engage the U-shaped strap.

3. For exercising the arms and shoulders, the combination of a double cross arm frame and a tension spring; said double cross arm frame comprising: a vertical frame member adapted to be straddled by the legs of a user; a lower horizontal cross arm member extending from both sides of the vertical member and over which the user may place his legs; and an upper horizontal cross arm member adapted to be grasped by the hands of the user, whereby the user and double cross arm frame may be placed in vertical oscillation by a vertical pumping action of the user pulling upwardly with his arms on the upper cross arm member.

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